

REMARKS

Claims 16-23 remain pending in this application. Claims 24 and 25 have been canceled, without prejudice or disclaimer of the subject matter presented therein. Claims 16-18, 20 and 22 and are in independent form.

At page 1 of the Office Action, it is stated that the substitute specification filed on December 31, 2001, has not been entered because it does not conform to 37 C.F.R. § 1.125(b) and (c) in that the statement as to a lack of new matter under 37 C.F.R. § 1.125(b) is missing. Applicants hereby submit that the substitute specification includes no new matter. Entry of the substitute specification is respectfully requested.

Applicants propose to amend the substitute specification to cross-reference all parent applications along with their current status, as required in the Office Action.

Claims 16-25 were rejected under 35 U.S.C. § 103(a) as being obvious from U.S. Patent 5,591,061 (Ikeda et al.) in view of European Patent EP 0 788 130 (Yamanobe).

First, cancellation of Claims 24 and 25 renders the rejections of those claims moot.

Claim 16 is directed to a method of manufacturing an electron source. The method includes an exposing step and an introducing step. In the exposing step, a surface of a substrate, on which a plurality of electron-emitting devices are to be formed, is exposed to a sealed atmosphere. In the introducing step, a gas containing carbon is introduced into the sealed atmosphere. The sealed atmosphere is formed by a chamber and

the chamber is heated before the introducing step. The introducing of a gas containing carbon is performed while exhausting the sealed atmosphere formed by the chamber.

One notable feature of Claim 16 is that a chamber, forming a sealed atmosphere into which a gas containing carbon is introduced, is heated before introducing the gas.

Ikeda et al. relates to an electron-emitting device, having a pair of device electrodes and an electroconductive thin film including an electron emitting region arranged between the electrodes. The device is manufactured by way of an activation process for increasing the emission current of the device. The activation process includes steps of (a) applying a voltage to the electroconductive thin film having a gap section under initial conditions, (b) detecting the electric performance of the electroconductive thin film, and (c) modifying, if necessary, the initial conditions as a function of the detected electric performance of the electroconductive thin film.

The Office Action states, at page 3, that “Ikeda discloses the step of heating the chamber at prior to the activation step (Column 13, lines 11-19), but fails to particularly disclose heating the chamber prior the introducing step.” Applicants submit that nothing in Ikeda et al. teaches or suggests heating a chamber *itself*, the chamber forming a sealed atmosphere into which a gas containing carbon is introduced, before introducing the gas, as recited in Claim 16.

Yamanobe relates to an electron-emitting device comprising an

electroconductive film including an electron-emitting region and a pair of electrodes for applying a voltage to the electroconductive film. The electron-emitting region is formed by applying a film of organic substance to the electroconductive film, carbonizing the organic substance by electrically energizing the electroconductive film, and forming a fissure or fissures in the electroconductive film prior to the carbonization.

Therefore, Yamanobe discusses an activation process in which an organic substance film is applied to an electroconductive film, and the organic substance film is carbonized (see the Abstract and Examples 1-8 of that patent, as well as page 23, lines 3-7). Example 8 of Yamanobe discusses baking a face plate in order to remove the water, oxygen, CO, and CO₂ that have been adsorbed by the face plate, and baking a rear plate (an electron source substrate in this example, see page 21, line 31) in order to remove the water, oxygen, Co, and CO₂ that have been adsorbed by the rear plate. (See page 21, line 28, to page 22, line 57.) However, although Example 8 of Yamanobe discusses pre-heatings of a face plate and a substrate (a rear plate) on which an electron-emitting device is disposed, the face plate and the substrate (rear plate) do not form a chamber forming the sealed atmosphere into which a gas containing carbon is introduced, as recited in Claim 16. Accordingly, Yamanobe does not teach or suggest the step of introducing a gas containing carbon into a sealed atmosphere formed by a chamber, the chamber being heated before introducing the gas, as recited in Claim 16.

Yamanobe discusses, in Comparative Example 1 (see page 13, line

44, to page 14, line 30), an activation process achieved by introducing a gas containing carbon; however, Yamanobe does not teach or suggest heating the chamber forming the sealed atmosphere into which the gas is introduced.

Accordingly, although Yamanobe suggests that it is advantageous to remove moisture before the activation, Yamanobe discusses, as a process of removing the moisture, merely heating the face plate and the substrate (rear plate) on which the electron-emitting device is formed. However, Yamanobe does not teach or suggest that, in the case of the process using the gas containing carbon, before introducing the gas, the chamber forming the sealed atmosphere into which the gas containing the carbon is introduced is provided, and the *chamber itself* is heated, as recited in Claim 16.

Applicants submit that nothing in Ikeda et al. or Yamanobe, when taken either separately or in any permissible combination (if any) would teach or suggest the claimed heating process of the chamber itself. In particular, Applicants submit that nothing in Ikeda et al. or Yamanobe, when taken either separately or in any permissible combination (if any) would teach or suggest heating a chamber *itself*, the chamber forming a sealed atmosphere into which a gas containing carbon is introduced, before introducing the gas, as recited in Claim 16.

In view of the foregoing arguments, withdrawal of the Section 103(a) rejection of Claim 16 is respectfully requested.

Independent Claims 17, 18, 20, and 22 recite features that are similar in many relevant respects to those of Claim 16 emphasized above, and also are believed to be

clearly patentable over the prior art relied on in the Office Action for substantially the same reasons as is Claim 16.

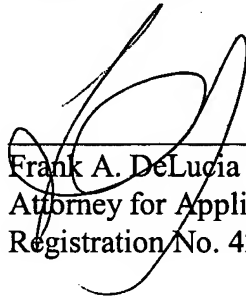
A review of the other art of record has failed to reveal anything which, in Applicants' opinion, would remedy the deficiencies of the art discussed above, as references against the independent claims herein. Those claims are therefore believed patentable over the art of record.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,



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